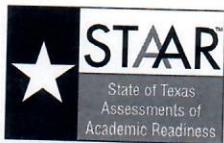


STAAR ALGEBRA II REFERENCE MATERIALS



GENERAL FORMULAS

Slope of a line

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Law of Sines: $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

Law of Cosines: $c^2 = a^2 + b^2 - 2ab \cos C$

Logarithmic Growth and Decay

$$A = Pe^{rt}$$

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

LOGARITHMS

Product

$$\log_b(xy) = \log_b x + \log_b y$$

Quotient

$$\log_b\left(\frac{x}{y}\right) = \log_b x - \log_b y$$

Power

$$\log_b(x^r) = r \log_b x$$

CONIC SECTIONS

General form

$$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$$

Circle

$$(x - h)^2 + (y - k)^2 = r^2$$

Parabola

$$(x - h)^2 = 4p(y - k)$$

$$(y - k)^2 = 4p(x - h)$$

Ellipse

$$\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$$

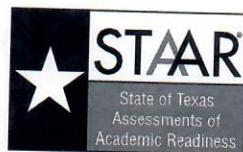
$$\frac{(y - k)^2}{a^2} + \frac{(x - h)^2}{b^2} = 1$$

Hyperbola

$$\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$$

$$\frac{(y - k)^2}{a^2} - \frac{(x - h)^2}{b^2} = 1$$

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FACTORING

Perfect square trinomials

$$a^2 + 2ab + b^2 = (a + b)^2$$
$$a^2 - 2ab + b^2 = (a - b)^2$$

Difference of squares

$$a^2 - b^2 = (a - b)(a + b)$$

Sum of cubes

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

Difference of cubes

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

PROPERTIES OF EXPONENTS

Product of powers

$$a^m a^n = a^{(m+n)}$$

Quotient of powers

$$\frac{a^m}{a^n} = a^{(m-n)}$$

Power of a power

$$(a^m)^n = a^{mn}$$

Rational exponent

$$a^{\frac{m}{n}} = \sqrt[n]{a^m}$$

Negative exponent

$$a^{-n} = \frac{1}{a^n}$$

QUADRATIC EQUATIONS

Standard form

$$f(x) = ax^2 + bx + c$$

Vertex form

$$f(x) = a(x - h)^2 + k$$

Parabola

$$(x - h)^2 = 4p(y - k)$$
$$(y - k)^2 = 4p(x - h)$$

Quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Axis of symmetry

$$x = \frac{-b}{2a}$$